

SEQUENCE LISTING

<110> Presnell, Scott R.
 Conklin, Darrell C.
 Novak, Julia E.
 Hammond, Angela K.

<120> POLYNUCLEOTIDES ENCODING CYTOKINE RECEPTOR ZALPHA11

<130> 98-55D2

<150> US 60/100,896

<151> 1998-09-23

<150> US 60/123,546

<151> 1999-03-09

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<151> 1999-07-06

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| gagtcagc atg ccg cgt ggc tgg gcc gcc ccc ttg ctc ctg ctg ctg ctc | 110 |
| Met Pro Arg Gly Trp Ala Ala Pro Leu Leu Leu Leu Leu | |
| 1 5 10 | |
| cag gga ggc tgg ggc tgc ccc gac ctc gtc tgc tac acc gat tac ctc | 158 |
| Gln Gly Gly Trp Gly Cys Pro Asp Leu Val Cys Tyr Thr Asp Tyr Leu | |
| 15 20 25 30 | |

| | |
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| cag acg gtc atc tgc atc ctg gaa atg tgg aac ctc cac ccc agc acg Gln Thr Val Ile Cys Ile Leu Glu Met Trp Asn Leu His Pro Ser Thr | 206 |
| 35 40 45 | |
| ctc acc ctt acc tgg caa gac cag tat gaa gag ctg aag gac gag gcc Leu Thr Leu Thr Trp Gln Asp Gln Tyr Glu Glu Leu Lys Asp Glu Ala | 254 |
| 50 55 60 | |
| acc tcc tgc agc ctc cac agg tcg gcc cac aat gcc acg cat gcc acc Thr Ser Cys Ser Leu His Arg Ser Ala His Asn Ala Thr His Ala Thr | 302 |
| 65 70 75 | |
| tac acc tgc cac atg gat gta ttc cac ttc atg gcc gac gac att ttc Tyr Thr Cys His Met Asp Val Phe His Phe Met Ala Asp Asp Ile Phe | 350 |
| 80 85 90 | |
| agt gtc aac atc aca gac cag tct ggc aac tac tcc cag gag tgt ggc Ser Val Asn Ile Thr Asp Gln Ser Gly Asn Tyr Ser Gln Glu Cys Gly | 398 |
| 95 100 105 110 | |
| agc ttt ctc ctg gct gag agc atc aag ccg gct ccc cct ttc aac gtg Ser Phe Leu Leu Ala Glu Ser Ile Lys Pro Ala Pro Pro Phe Asn Val | 446 |
| 115 120 125 | |
| act gtg acc ttc tca gga cag tat aat atc tcc tgg cgc tca gat tac Thr Val Thr Phe Ser Gly Gln Tyr Asn Ile Ser Trp Arg Ser Asp Tyr | 494 |
| 130 135 140 | |
| gaa gac cct gcc ttc tac atg ctg aag ggc aag ctt cag tat gag ctg Glu Asp Pro Ala Phe Tyr Met Leu Lys Gly Lys Leu Gln Tyr Glu Leu | 542 |
| 145 150 155 | |
| cag tac agg aac cgg gga gac ccc tgg gct gtg agt ccg agg aga aag Gln Tyr Arg Asn Arg Gly Asp Pro Trp Ala Val Ser Pro Arg Arg Lys | 590 |
| 160 165 170 | |
| ctg atc tca gtg gac tca aga agt gtc tcc ctc ctc ccc ctg gag ttc Leu Ile Ser Val Asp Ser Arg Ser Val Ser Leu Leu Pro Leu Glu Phe | 638 |
| 175 180 185 190 | |
| cgc aaa gac tcg agc tat gag ctg cag gtg cgg gca ggg ccc atg cct Arg Lys Asp Ser Ser Tyr Glu Leu Gln Val Arg Ala Gly Pro Met Pro | 686 |

| 195 | 200 | 205 | |
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| ggc tcc tcc tac cag ggg acc tgg agt gaa tgg agt gac ccg gtc atc | | | 734 |
| Gly Ser Ser Tyr Gln Gly Thr Trp Ser Glu Trp Ser Asp Pro Val Ile | | | |
| 210 | 215 | 220 | |
| ttt cag acc cag tca gag gag tta aag gaa ggc tgg aac cct cac ctg | | | 782 |
| Phe Gln Thr Gln Ser Glu Glu Leu Lys Glu Gly Trp Asn Pro His Leu | | | |
| 225 | 230 | 235 | |
| ctg ctt ctc ctc ctg ctt gtc ata gtc ttc att cct gcc ttc tgg agc | | | 830 |
| Leu Leu Leu Leu Leu Leu Val Ile Val Phe Ile Pro Ala Phe Trp Ser | | | |
| 240 | 245 | 250 | |
| ctg aag acc cat cca ttg tgg agg cta tgg aag aag ata tgg gcc gtc | | | 878 |
| Leu Lys Thr His Pro Leu Trp Arg Leu Trp Lys Lys Ile Trp Ala Val | | | |
| 255 | 260 | 265 | 270 |
| ccc agc cct gag cgg ttc ttc atg ccc ctg tac aag ggc tgc agc gga | | | 926 |
| Pro Ser Pro Glu Arg Phe Phe Met Pro Leu Tyr Lys Gly Cys Ser Gly | | | |
| 275 | 280 | 285 | |
| gac ttc aag aaa tgg gtg ggt gca ccc ttc act ggc tcc agc ctg gag | | | 974 |
| Asp Phe Lys Lys Trp Val Gly Ala Pro Phe Thr Gly Ser Ser Leu Glu | | | |
| 290 | 295 | 300 | |
| ctg gga ccc tgg agc cca gag gtg ccc tcc acc ctg gag gtg tac agc | | | 1022 |
| Leu Gly Pro Trp Ser Pro Glu Val Pro Ser Thr Leu Glu Val Tyr Ser | | | |
| 305 | 310 | 315 | |
| tgc cac cca cca cgg agc ccg gcc aag agg ctg cag ctc acg gag cta | | | 1070 |
| Cys His Pro Pro Arg Ser Pro Ala Lys Arg Leu Gln Leu Thr Glu Leu | | | |
| 320 | 325 | 330 | |
| caa gaa cca gca gag ctg gtg gag tct gac ggt gtg ccc aag ccc agc | | | 1118 |
| Gln Glu Pro Ala Glu Leu Val Glu Ser Asp Gly Val Pro Lys Pro Ser | | | |
| 335 | 340 | 345 | 350 |
| ttc tgg ccg aca gcc cag aac tcg ggg ggc tca gct tac agt gag gag | | | 1166 |
| Phe Trp Pro Thr Ala Gln Asn Ser Gly Gly Ser Ala Tyr Ser Glu Glu | | | |
| 355 | 360 | 365 | |

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| agg gat cgg cca tac ggc ctg gtg tcc att gac aca gtg act gtg cta | 1214 |
| Arg Asp Arg Pro Tyr Gly Leu Val Ser Ile Asp Thr Val Thr Val Leu | |
| 370 375 380 | |
| gat gca gag ggg cca tgc acc tgg ccc tgc agc tgt gag gat gac ggc | 1262 |
| Asp Ala Glu Gly Pro Cys Thr Trp Pro Cys Ser Cys Glu Asp Asp Gly | |
| 385 390 395 | |
| tac cca gcc ctg gac ctg gat gct ggc ctg gag ccc agc cca ggc cta | 1310 |
| Tyr Pro Ala Leu Asp Leu Asp Ala Gly Leu Glu Pro Ser Pro Gly Leu | |
| 400 405 410 | |
| gag gac cca ctc ttg gat gca ggg acc aca gtc ctg tcc tgt ggc tgt | 1358 |
| Glu Asp Pro Leu Leu Asp Ala Gly Thr Thr Val Leu Ser Cys Gly Cys | |
| 415 420 425 430 | |
| gtc tca gct ggc agc cct ggg cta gga ggg ccc ctg gga agc ctc ctg | 1406 |
| Val Ser Ala Gly Ser Pro Gly Leu Gly Gly Pro Leu Gly Ser Leu Leu | |
| 435 440 445 | |
| gac aga cta aag cca ccc ctt gca gat ggg gag gac tgg gct ggg gga | 1454 |
| Asp Arg Leu Lys Pro Pro Leu Ala Asp Gly Glu Asp Trp Ala Gly Gly | |
| 450 455 460 | |
| ctg ccc tgg ggt ggc cgg tca cct gga ggg gtc tca gag agt gag gcg | 1502 |
| Leu Pro Trp Gly Gly Arg Ser Pro Gly Gly Val Ser Glu Ser Glu Ala | |
| 465 470 475 | |
| ggc tca ccc ctg gcc ggc ctg gat atg gac acg ttt gac agt ggc ttt | 1550 |
| Gly Ser Pro Leu Ala Gly Leu Asp Met Asp Thr Phe Asp Ser Gly Phe | |
| 480 485 490 | |
| gtg ggc tct gac tgc agc agc cct gtg gag tgt gac ttc acc agc ccc | 1598 |
| Val Gly Ser Asp Cys Ser Ser Pro Val Glu Cys Asp Phe Thr Ser Pro | |
| 495 500 505 510 | |
| ggg gac gaa gga ccc ccc cgg agc tac ctc cgc cag tgg gtg gtc att | 1646 |
| Gly Asp Glu Gly Pro Pro Arg Ser Tyr Leu Arg Gln Trp Val Val Ile | |
| 515 520 525 | |
| cct ccg cca ctt tcg agc cct gga ccc cag gcc agc taatgaggct | 1692 |
| Pro Pro Pro Leu Ser Ser Pro Gly Pro Gln Ala Ser | |

530

535

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| gactggatgt | ccagagctgg | ccaggccact | gggccctgag | ccagagacaa | ggtcacctgg | 1752 |
| gctgtgatgt | gaagacacct | gcagcctttg | gtctcctgga | tgggcctttg | agcctgatgt | 1812 |
| ttacagtgtc | tgtgtgtgtg | tgtgcatatg | tgtgtgtgtg | catatgcatg | tgtgtgtgtg | 1872 |
| tgtgtgtcct | aggtgcgag | tggcatgtcc | acgtgtgtgt | gtgattgcac | gtgcctgtgg | 1932 |
| gcctgggata | atgcccattg | tactccatgc | attcacctgc | cctgtgcatg | tctggactca | 1992 |
| cggagctcac | ccatgtgcac | aagtgtgcac | agtaaactgt | tttgtggtca | acagatgaca | 2052 |
| acagccgtcc | tccctcctag | ggctctgtgt | tgcaagttgg | tccacagcat | ctccggggct | 2112 |
| ttgtgggata | agggcattgc | ctgtgactga | ggcggagccc | agccctccag | cgtctgcctc | 2172 |
| caggagctgc | aagaagtcca | tattgttcct | tatcacctgc | caacaggaag | cgaaagggga | 2232 |
| tggagtgagc | ccatggtgac | ctcggaatg | gcaatttttt | gggcggcccc | tggacgaagg | 2292 |
| tctgaatccc | gactctgata | ccttctggct | gtgctacctg | agccaagtgc | cctccccctc | 2352 |
| ctgggctaga | gtttccttat | ccagacagtg | gggaaggcat | gacacacctg | ggggaaattg | 2412 |
| gcgatgtcac | ccgtgtacgg | tacgcagccc | agagcagacc | ctcaataaac | gtcagcttcc | 2472 |
| ttccttctgc | ggccagagcc | gaggcgggag | ggggtgagaa | catcaatcgt | cagcgacagc | 2532 |
| ctgggcaccc | gcggggccgt | cccgcctgca | gagggccact | cggggggggt | tccaggctta | 2592 |
| aaatcagtcc | gtttcgtctc | ttggaacag | ctccccacca | accaagattt | ctttttctaa | 2652 |
| cttctgtac | taagttttta | aaaattccct | ttatgcaccc | aagagatatt | tattaaacac | 2712 |
| caattacgta | gcaggccatg | gctcatggga | cccaccccc | gtggcactca | tggagggggc | 2772 |
| tgcaggttgg | aactatgcag | tgtgctccgg | ccacacatcc | tgctggggcc | cctaccctgc | 2832 |
| cccaattcaa | tcctgccaat | aaatcctgtc | ttatttggtc | atcctggaga | attga | 2887 |

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| Met | Pro | Arg | Gly | Trp | Ala | Ala | Pro | Leu | Leu | Leu | Leu | Leu | Gln | Gly |
| 1 | | | | 5 | | | | 10 | | | | | 15 | |
| Gly | Trp | Gly | Cys | Pro | Asp | Leu | Val | Cys | Tyr | Thr | Asp | Tyr | Leu | Gln |
| | | | 20 | | | | | 25 | | | | | 30 | |
| Val | Ile | Cys | Ile | Leu | Glu | Met | Trp | Asn | Leu | His | Pro | Ser | Thr | Leu |
| | | 35 | | | | | 40 | | | | | 45 | | |
| Leu | Thr | Trp | Gln | Asp | Gln | Tyr | Glu | Glu | Leu | Lys | Asp | Glu | Ala | Thr |
| | 50 | | | | | 55 | | | | | 60 | | | Ser |
| Cys | Ser | Leu | His | Arg | Ser | Ala | His | Asn | Ala | Thr | His | Ala | Thr | Tyr |
| 65 | | | | | 70 | | | | 75 | | | | | 80 |
| Cys | His | Met | Asp | Val | Phe | His | Phe | Met | Ala | Asp | Asp | Ile | Phe | Ser |
| | | | 85 | | | | | 90 | | | | | 95 | Val |
| Asn | Ile | Thr | Asp | Gln | Ser | Gly | Asn | Tyr | Ser | Gln | Glu | Cys | Gly | Ser |
| | | | 100 | | | | 105 | | | | | | 110 | Phe |

Leu Leu Ala Glu Ser Ile Lys Pro Ala Pro Pro Phe Asn Val Thr Val
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 Thr Phe Ser Gly Gln Tyr Asn Ile Ser Trp Arg Ser Asp Tyr Glu Asp
 130 135 140
 Pro Ala Phe Tyr Met Leu Lys Gly Lys Leu Gln Tyr Glu Leu Gln Tyr
 145 150 155 160
 Arg Asn Arg Gly Asp Pro Trp Ala Val Ser Pro Arg Arg Lys Leu Ile
 165 170 175
 Ser Val Asp Ser Arg Ser Val Ser Leu Leu Pro Leu Glu Phe Arg Lys
 180 185 190
 Asp Ser Ser Tyr Glu Leu Gln Val Arg Ala Gly Pro Met Pro Gly Ser
 195 200 205
 Ser Tyr Gln Gly Thr Trp Ser Glu Trp Ser Asp Pro Val Ile Phe Gln
 210 215 220
 Thr Gln Ser Glu Glu Leu Lys Glu Gly Trp Asn Pro His Leu Leu Leu
 225 230 235 240
 Leu Leu Leu Leu Val Ile Val Phe Ile Pro Ala Phe Trp Ser Leu Lys
 245 250 255
 Thr His Pro Leu Trp Arg Leu Trp Lys Lys Ile Trp Ala Val Pro Ser
 260 265 270
 Pro Glu Arg Phe Phe Met Pro Leu Tyr Lys Gly Cys Ser Gly Asp Phe
 275 280 285
 Lys Lys Trp Val Gly Ala Pro Phe Thr Gly Ser Ser Leu Glu Leu Gly
 290 295 300
 Pro Trp Ser Pro Glu Val Pro Ser Thr Leu Glu Val Tyr Ser Cys His
 305 310 315 320
 Pro Pro Arg Ser Pro Ala Lys Arg Leu Gln Leu Thr Glu Leu Gln Glu
 325 330 335
 Pro Ala Glu Leu Val Glu Ser Asp Gly Val Pro Lys Pro Ser Phe Trp
 340 345 350
 Pro Thr Ala Gln Asn Ser Gly Gly Ser Ala Tyr Ser Glu Glu Arg Asp
 355 360 365
 Arg Pro Tyr Gly Leu Val Ser Ile Asp Thr Val Thr Val Leu Asp Ala
 370 375 380
 Glu Gly Pro Cys Thr Trp Pro Cys Ser Cys Glu Asp Asp Gly Tyr Pro
 385 390 395 400
 Ala Leu Asp Leu Asp Ala Gly Leu Glu Pro Ser Pro Gly Leu Glu Asp
 405 410 415
 Pro Leu Leu Asp Ala Gly Thr Thr Val Leu Ser Cys Gly Cys Val Ser
 420 425 430
 Ala Gly Ser Pro Gly Leu Gly Gly Pro Leu Gly Ser Leu Leu Asp Arg
 435 440 445
 Leu Lys Pro Pro Leu Ala Asp Gly Glu Asp Trp Ala Gly Gly Leu Pro

| | | | | |
|---|-----|-----|-----|-----|
| 450 | | 455 | | 460 |
| Trp Gly Gly Arg Ser Pro Gly Gly Val Ser Glu Ser Glu Ala Gly Ser | | | | |
| 465 | | 470 | | 475 |
| Pro Leu Ala Gly Leu Asp Met Asp Thr Phe Asp Ser Gly Phe Val Gly | | | | |
| | 485 | | 490 | 495 |
| Ser Asp Cys Ser Ser Pro Val Glu Cys Asp Phe Thr Ser Pro Gly Asp | | | | |
| | 500 | | 505 | 510 |
| Glu Gly Pro Pro Arg Ser Tyr Leu Arg Gln Trp Val Val Ile Pro Pro | | | | |
| | 515 | | 520 | 525 |
| Pro Leu Ser Ser Pro Gly Pro Gln Ala Ser | | | | |
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 <222> (1)...(5)
 <223> Xaa = Any Amino Acid

<221> VARIANT
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 Trp Ser Xaa Trp Ser
 1 5

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| ccngayytng | tntgytayac | ngaytayytn | caracngtna | thtgyathyt | ngaratgtgg | 120 |
| aayytncayc | cnwsnacnyt | nacnytnacn | tggcargayc | artaygarga | rytnaargay | 180 |
| gargcnacnw | sntgywsnyt | ncaymgwnsn | gcncayaayg | cnacncaygc | nacntayacn | 240 |
| tgycayatgg | aygtnntyca | yttatggcn | gaygayatht | tywsngtnaa | yathacngay | 300 |
| carwsnggna | aytaywsnca | rgartgyggn | wsnttyytny | tngcngarws | nathaarccn | 360 |
| gcncncncnt | tyaaygtnac | ngtnacntty | wsnggncart | ayaayathws | ntggmgwnsn | 420 |
| gaytaygarg | ayccngcntt | ytayatgytn | aarggnaary | tncartayga | rytncartay | 480 |
| mgnaaymgng | gngayccntg | ggcngtnwsn | ccnmgmngna | arytnathws | ngtngaywsn | 540 |
| mgnwsngtnw | snytnytncc | nytngartty | mgnaargayw | snwsntayga | rytncargtn | 600 |
| mgngcnggnc | cnatgccngg | nwsnwsntay | carggnacnt | ggwsngartg | gwsngayccn | 660 |
| gtnathttyc | aracncarws | ngargarytn | aargarggnt | ggaayccnca | yytnytnytn | 720 |
| ytnytnytny | tngtnathgt | nttyathccn | gcnttytgww | snytnaarac | ncayccnytn | 780 |
| tggmgnytn | ggaaraarat | htgggcngtn | ccnwsnccng | armgnttytt | yatgccnytn | 840 |
| tayaarggnt | gywsnggnga | yttyaaraar | tgggtnggng | cncnttyac | nggnwsnwsn | 900 |
| ytngarytng | gnccntggws | nccngargtn | ccnwsnacny | tngargtnta | ywsntgy cay | 960 |
| ccncnmgngw | sncncngcnaa | rmgnytn car | ytnacngary | tncargarcc | ngcngarytn | 1020 |
| gtngarwsng | ayggngtncc | naarccnwsn | ttytgccna | cngcncaraa | ywsnggnggn | 1080 |
| wsngcntayw | sngargarmg | ngaymgncn | tayggnytn | tnwsnathga | yacngtnacn | 1140 |
| gtnytngayg | cngarggncc | ntgyacntgg | ccntgywsnt | gygargayga | yggntayccn | 1200 |
| gcnytngayy | tngaygcngg | nytngarccn | wsnccnggny | tngargaycc | nytnytn gay | 1260 |
| gcnggnacna | cngtnytnws | ntgyggntgy | gtwnsngcng | grwsnccngg | nytnggnggn | 1320 |
| ccnytnggngw | snytnytn ga | ymgnytnaar | ccncnytn | cngayggnga | rgaytgggcn | 1380 |
| ggnggnytn | cntggggngg | nmgnwsnccn | ggnggngtnw | sngarwsnga | rgcnggnwsn | 1440 |
| ccnytngcng | gnytn gayat | ggayacntty | gaywsnggnt | tygtnggnws | ngaytgywsn | 1500 |
| wsnccngtng | artgygaytt | yacnwsnccn | ggngaygarg | gnccnccnmg | nwsntayytn | 1560 |
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<223> Oligonucleotide primer ZC6675

<400> 30

gtggatgccg aaccagtc

20

<210> 31

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer ZC7727

<400> 31

tggtcacagc tacctgggct c

21

<210> 32

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer ZC8290

<400> 32

ccaccgagac tgcttgatc accttg

26

<210> 33

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer ZC6622

<400> 33

ctgggctgga aactggcaca c

21

<210> 34

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer ZC7736

<400> 34

cactgtcaga aatggagc

18

<210> 35

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer ZC9273

<400> 35

ggtccctccc cgggcaccga gaga

24

<210> 36

<211> 36

<212> DNA

<213> Artificial Sequence

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<223> Oligonucleotide primer ZC19905

<400> 36

acaggatccg tcagcatgcc gcgtggctgg gccgcc

36

<210> 37

<211> 33
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<220>
 <223> Oligonucleotide primer ZC19906

<400> 37
 acagaattct tagctggcct ggggtccagg cgt 33

<210> 38
 <211> 22
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<220>
 <223> Oligonucleotide primer ZC20114

<400> 38
 cctgccttct acatgctgaa gg 22

<210> 39
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 <212> DNA
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<220>
 <223> Oligonucleotide primer ZC19954

<400> 39
 actgggctgg gggactgc 18

<210> 40
 <211> 22
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<220>
 <223> Oligonucleotide primer ZC20116

<400> 40
 agcacagtcā ctgtgtcaat gg 22

<210> 41
 <211> 6
 <212> PRT
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<220>
 <223> Glu-Glu (CEE) tag amino acid sequence

<400> 41
 Glu Tyr Met Pro Met Glu
 1 5

<210> 42
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide promoter ZC19931

<400> 42
 ggttggtacc gcaagatgcc gcgtggctgg gccgcc 36

<210> 43
 <211> 29
 <212> DNA
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<220>
 <223> Oligonucleotide primer ZC19932

<400> 43
 cggaggatcc gtgagggttc cagccttcc 29

<210> 44
 <211> 66
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Oligonucleotide primer spanning vector flanking
 region and the 5' end of the zalpha11

<400> 44

| | |
|---|----|
| tccactttgc ctttctctcc acaggtgtcc agggaattca tcgataatgc cgcgtggctg | 60 |
| ggccgc | 66 |

<210> 45

<211> 699

<212> DNA

<213> Homo sapiens

<400> 45

| | |
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| gagcccagat cttcagacaa aactcacaca tgcccaccgt gcccagcacc tgaagccgag | 60 |
| ggggcaccgt cagtcttctt cttcccccca aaaccaag acaccctcat gatctcccg | 120 |
| acccttgagg tcacatgcgt ggtggtggac gtgagccacg aagaccctga ggtcaagttc | 180 |
| aactggtacg tggacggcgt ggaggtgcat aatgccaaga caaagccgcg ggaggagcag | 240 |
| tacaacagca cgtaccgtgt ggtcagcgtc ctcaccgtcc tgcaccagga ctggctgaat | 300 |
| ggcaaggagt acaagtgcaa ggtctccaac aaagccctcc catcctccat cgagaaaacc | 360 |
| atctccaaag ccaaagggca gccccgagaa ccacaggtgt acaccctgcc cccatcccgg | 420 |
| gatgagctga ccaagaacca ggtcagcctg acctgcctgg tcaaaggctt ctatcccagc | 480 |
| gacatcgccg tggagtggga gagcaatggg cagccggaga acaactacaa gaccacgcct | 540 |
| cccgtgctgg actccgacgg ctcttcttct ctctacagca agctcaccgt ggacaagagc | 600 |
| aggtggcagc aggggaacgt cttctcatgc tccgtgatgc atgaggctct gcacaaccac | 660 |
| tacacgcaga agagcctctc cctgtctccg ggtaaataa | 699 |

<210> 46

<211> 62

<212> DNA

<213> Artificial Sequence

<220>

<223> First Oligonucleotide primer spanning 3' end of
the zalpha11 extracellular domain and the 5' end
of Fc4

<400> 46

| | |
|---|----|
| gcacggtggg catgtgtgag ttttgtctga agatctgggc tcgtgagggt tccagccttc | 60 |
| ct | 62 |

<210> 47

<211> 61

<212> DNA

<213> Artificial Sequence

<220>

<223> Second Oligonucleotide primer spanning 3' end of the zalphall extracellular domain and the 5' end of Fc4

<400> 47

agacccagtc agaggagtta aaggaaggct ggaaccctca cgagcccaga tcttcagaca 60
a 61

<210> 48

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide primer spanning the 3' end of Fc4 and the vector flanking region

<400> 48

gtgggcctct ggggtgggta caaccccaga gctgttttaa tctagattat ttacccggag 60
acagggga 67

<210> 49

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> FLAG tag amino acid sequence

<400> 49

Asp Tyr Lys Asp Asp Asp Asp Lys
1 5

<210> 50

<211> 1821

<212> DNA

<213> Artificial Sequence

<220>

<223> Polynucleotide encoding MBP-zalphall soluble receptor fusion

<221> CDS

<222> (1)...(1821)

<400> 50

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| atg | aaa | atc | gaa | gaa | ggt | aaa | ctg | gta | atc | tgg | att | aac | ggc | gat | aaa | 48 |
| Met | Lys | Ile | Glu | Glu | Gly | Lys | Leu | Val | Ile | Trp | Ile | Asn | Gly | Asp | Lys | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| ggc | tat | aac | ggt | ctc | gct | gaa | gtc | ggt | aag | aaa | ttc | gag | aaa | gat | acc | 96 |
| Gly | Tyr | Asn | Gly | Leu | Ala | Glu | Val | Gly | Lys | Lys | Phe | Glu | Lys | Asp | Thr | |
| | | | 20 | | | | | 25 | | | | | | 30 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| gga | att | aaa | gtc | acc | gtt | gag | cat | ccg | gat | aaa | ctg | gaa | gag | aaa | ttc | 144 |
| Gly | Ile | Lys | Val | Thr | Val | Glu | His | Pro | Asp | Lys | Leu | Glu | Glu | Lys | Phe | |
| | | | 35 | | | | | 40 | | | | | | 45 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| cca | cag | gtt | gcg | gca | act | ggc | gat | ggc | cct | gac | att | atc | ttc | tgg | gca | 192 |
| Pro | Gln | Val | Ala | Ala | Thr | Gly | Asp | Gly | Pro | Asp | Ile | Ile | Phe | Trp | Ala | |
| | | 50 | | | | | 55 | | | | | | | 60 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| cac | gac | cg | ttt | ggt | ggc | tac | gct | caa | tct | ggc | ctg | ttg | gct | gaa | atc | 240 |
| His | Asp | Arg | Phe | Gly | Gly | Tyr | Ala | Gln | Ser | Gly | Leu | Leu | Ala | Glu | Ile | |
| | 65 | | | | 70 | | | | | 75 | | | | 80 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| acc | ccg | gac | aaa | gcg | ttc | cag | gac | aag | ctg | tat | ccg | ttt | acc | tgg | gat | 288 |
| Thr | Pro | Asp | Lys | Ala | Phe | Gln | Asp | Lys | Leu | Tyr | Pro | Phe | Thr | Trp | Asp | |
| | | | | 85 | | | | | 90 | | | | | 95 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| gcc | gta | cgt | tac | aac | ggc | aag | ctg | att | gct | tac | ccg | atc | gct | gtt | gaa | 336 |
| Ala | Val | Arg | Tyr | Asn | Gly | Lys | Leu | Ile | Ala | Tyr | Pro | Ile | Ala | Val | Glu | |
| | | | 100 | | | | | 105 | | | | | | 110 | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| gcg | tta | tcg | ctg | att | tat | aac | aaa | gat | ctg | ctg | ccg | aac | ccg | cca | aaa | 384 |
| Ala | Leu | Ser | Leu | Ile | Tyr | Asn | Lys | Asp | Leu | Leu | Pro | Asn | Pro | Pro | Lys | |
| | | | 115 | | | | | 120 | | | | | 125 | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| acc | tgg | gaa | gag | atc | ccg | gcg | ctg | gat | aaa | gaa | ctg | aaa | gcg | aaa | ggt | 432 |
| Thr | Trp | Glu | Glu | Ile | Pro | Ala | Leu | Asp | Lys | Glu | Leu | Lys | Ala | Lys | Gly | |
| | | 130 | | | | | 135 | | | | | 140 | | | | |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| aag | agc | gcg | ctg | atg | ttc | aac | ctg | caa | gaa | ccg | tac | ttc | acc | tgg | ccg | 480 |
| Lys | Ser | Ala | Leu | Met | Phe | Asn | Leu | Gln | Glu | Pro | Tyr | Phe | Thr | Trp | Pro | |
| | 145 | | | | | 150 | | | | | 155 | | | | 160 | |

| | |
|---|------|
| ctg att gct gct gac ggg ggt tat gcg ttc aag tat gaa aac ggc aag Leu Ile Ala Ala Asp Gly Gly Tyr Ala Phe Lys Tyr Glu Asn Gly Lys 165 170 175 | 528 |
| tac gac att aaa gac gtg ggc gtg gat aac gct ggc gcg aaa gcg ggt Tyr Asp Ile Lys Asp Val Gly Val Asp Asn Ala Gly Ala Lys Ala Gly 180 185 190 | 576 |
| ctg acc ttc ctg gtt gac ctg att aaa aac aaa cac atg aat gca gac Leu Thr Phe Leu Val Asp Leu Ile Lys Asn Lys His Met Asn Ala Asp 195 200 205 | 624 |
| acc gat tac tcc atc gca gaa gct gcc ttt aat aaa ggc gaa aca gcg Thr Asp Tyr Ser Ile Ala Glu Ala Ala Phe Asn Lys Gly Glu Thr Ala 210 215 220 | 672 |
| atg acc atc aac ggc ccg tgg gca tgg tcc aac atc gac acc agc aaa Met Thr Ile Asn Gly Pro Trp Ala Trp Ser Asn Ile Asp Thr Ser Lys 225 230 235 240 | 720 |
| gtg aat tat ggt gta acg gta ctg ccg acc ttc aag ggt caa cca tcc Val Asn Tyr Gly Val Thr Val Leu Pro Thr Phe Lys Gly Gln Pro Ser 245 250 255 | 768 |
| aaa ccg ttc gtt ggc gtg ctg agc gca ggt att aac gcc gcc agt ccg Lys Pro Phe Val Gly Val Leu Ser Ala Gly Ile Asn Ala Ala Ser Pro 260 265 270 | 816 |
| aac aaa gag ctg gca aaa gag ttc ctc gaa aac tat ctg ctg act gat Asn Lys Glu Leu Ala Lys Glu Phe Leu Glu Asn Tyr Leu Leu Thr Asp 275 280 285 | 864 |
| gaa ggt ctg gaa gcg gtt aat aaa gac aaa ccg ctg ggt gcc gta gcg Glu Gly Leu Glu Ala Val Asn Lys Asp Lys Pro Leu Gly Ala Val Ala 290 295 300 | 912 |
| ctg aag tct tac gag gaa gag ttg gcg aaa gat cca cgt att gcc gcc Leu Lys Ser Tyr Glu Glu Glu Leu Ala Lys Asp Pro Arg Ile Ala Ala 305 310 315 320 | 960 |
| acc atg gaa aac gcc cag aaa ggt gaa atc atg ccg aac atc ccg cag Thr Met Glu Asn Ala Gln Lys Gly Glu Ile Met Pro Asn Ile Pro Gln | 1008 |

| 325 | 330 | 335 | |
|---|-----|-----|------|
| atg tcc gct ttc tgg tat gcc gtg cgt act gcg gtg atc aac gcc gcc | | | 1056 |
| Met Ser Ala Phe Trp Tyr Ala Val Arg Thr Ala Val Ile Asn Ala Ala | | | |
| 340 | 345 | 350 | |
| agc ggt cgt cag act gtc gat gaa gcc ctg aaa gac gcg cag act aat | | | 1104 |
| Ser Gly Arg Gln Thr Val Asp Glu Ala Leu Lys Asp Ala Gln Thr Asn | | | |
| 355 | 360 | 365 | |
| tcg agc tcc cac cat cac cat cac gcg aat tcg gta ccg ctg gtt | | | 1152 |
| Ser Ser Ser His His His His His Ala Asn Ser Val Pro Leu Val | | | |
| 370 | 375 | 380 | |
| ccg cgt gga tcc tgc ccc gac ctc gtc tgc tac acc gat tac ctc cag | | | 1200 |
| Pro Arg Gly Ser Cys Pro Asp Leu Val Cys Tyr Thr Asp Tyr Leu Gln | | | |
| 385 | 390 | 395 | 400 |
| acg gtc atc tgc atc ctg gaa atg tgg aac ctc cac ccc agc acg ctc | | | 1248 |
| Thr Val Ile Cys Ile Leu Glu Met Trp Asn Leu His Pro Ser Thr Leu | | | |
| 405 | 410 | 415 | |
| acc ctt acc tgg caa gac cag tat gaa gag ctg aag gac gag gcc acc | | | 1296 |
| Thr Leu Thr Trp Gln Asp Gln Tyr Glu Glu Leu Lys Asp Glu Ala Thr | | | |
| 420 | 425 | 430 | |
| tcc tgc agc ctc cac agg tcg gcc cac aat gcc acg cat gcc acc tac | | | 1344 |
| Ser Cys Ser Leu His Arg Ser Ala His Asn Ala Thr His Ala Thr Tyr | | | |
| 435 | 440 | 445 | |
| acc tgc cac atg gat gta ttc cac ttc atg gcc gac gac att ttc agt | | | 1392 |
| Thr Cys His Met Asp Val Phe His Phe Met Ala Asp Asp Ile Phe Ser | | | |
| 450 | 455 | 460 | |
| gtc aac atc aca gac cag tct ggc aac tac tcc cag gag tgt ggc agc | | | 1440 |
| Val Asn Ile Thr Asp Gln Ser Gly Asn Tyr Ser Gln Glu Cys Gly Ser | | | |
| 465 | 470 | 475 | 480 |
| ttt ctc ctg gct gag agc atc aag ccg gct ccc cct ttc aac gtg act | | | 1488 |
| Phe Leu Leu Ala Glu Ser Ile Lys Pro Ala Pro Pro Phe Asn Val Thr | | | |
| 485 | 490 | 495 | |
| gtg acc ttc tca gga cag tat aat atc tcc tgg cgc tca gat tac gaa | | | 1536 |

| | |
|---|------|
| Val Thr Phe Ser Gly Gln Tyr Asn Ile Ser Trp Arg Ser Asp Tyr Glu | |
| 500 505 510 | |
| gac cct gcc ttc tac atg ctg aag ggc aag ctt cag tat gag ctg cag | 1584 |
| Asp Pro Ala Phe Tyr Met Leu Lys Gly Lys Leu Gln Tyr Glu Leu Gln | |
| 515 520 525 | |
| tac agg aac cgg gga gac ccc tgg gct gtg agt ccg agg aga aag ctg | 1632 |
| Tyr Arg Asn Arg Gly Asp Pro Trp Ala Val Ser Pro Arg Arg Lys Leu | |
| 530 535 540 | |
| atc tca gtg gac tca aga agt gtc tcc ctc ctc ccc ctg gag ttc cgc | 1680 |
| Ile Ser Val Asp Ser Arg Ser Val Ser Leu Leu Pro Leu Glu Phe Arg | |
| 545 550 555 560 | |
| aaa gac tcg agc tat gag ctg cag gtg cgg gca ggg ccc atg cct ggc | 1728 |
| Lys Asp Ser Ser Tyr Glu Leu Gln Val Arg Ala Gly Pro Met Pro Gly | |
| 565 570 575 | |
| tcc tcc tac cag ggg acc tgg agt gaa tgg agt gac ccg gtc atc ttt | 1776 |
| Ser Ser Tyr Gln Gly Thr Trp Ser Glu Trp Ser Asp Pro Val Ile Phe | |
| 580 585 590 | |
| cag acc cag tca gag gag tta aag gaa ggc tgg aac cct cac tag | 1821 |
| Gln Thr Gln Ser Glu Glu Leu Lys Glu Gly Trp Asn Pro His * | |
| 595 600 605 | |

<210> 51

<211> 606

<212> PRT

<213> Artificial Sequence

<400> 51

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| Met Lys Ile Glu Glu Gly Lys Leu Val Ile Trp Ile Asn Gly Asp Lys | |
| 1 5 10 15 | |
| Gly Tyr Asn Gly Leu Ala Glu Val Gly Lys Lys Phe Glu Lys Asp Thr | |
| 20 25 30 | |
| Gly Ile Lys Val Thr Val Glu His Pro Asp Lys Leu Glu Glu Lys Phe | |
| 35 40 45 | |
| Pro Gln Val Ala Ala Thr Gly Asp Gly Pro Asp Ile Ile Phe Trp Ala | |
| 50 55 60 | |
| His Asp Arg Phe Gly Gly Tyr Ala Gln Ser Gly Leu Leu Ala Glu Ile | |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| 65 | 70 | | | | | | | | 75 | | | | 80 | | | | |
| Thr | Pro | Asp | Lys | Ala | Phe | Gln | Asp | Lys | Leu | Tyr | Pro | Phe | Thr | Trp | Asp | | |
| | | | | 85 | | | | | 90 | | | | | 95 | | | |
| Ala | Val | Arg | Tyr | Asn | Gly | Lys | Leu | Ile | Ala | Tyr | Pro | Ile | Ala | Val | Glu | | |
| | | | | 100 | | | | | 105 | | | | | 110 | | | |
| Ala | Leu | Ser | Leu | Ile | Tyr | Asn | Lys | Asp | Leu | Leu | Pro | Asn | Pro | Pro | Lys | | |
| | | | | 115 | | | | | 120 | | | | | 125 | | | |
| Thr | Trp | Glu | Glu | Ile | Pro | Ala | Leu | Asp | Lys | Glu | Leu | Lys | Ala | Lys | Gly | | |
| | | | | 130 | | | | | 135 | | | | | 140 | | | |
| Lys | Ser | Ala | Leu | Met | Phe | Asn | Leu | Gln | Glu | Pro | Tyr | Phe | Thr | Trp | Pro | | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | | |
| Leu | Ile | Ala | Ala | Asp | Gly | Gly | Tyr | Ala | Phe | Lys | Tyr | Glu | Asn | Gly | Lys | | |
| | | | | 165 | | | | | 170 | | | | | 175 | | | |
| Tyr | Asp | Ile | Lys | Asp | Val | Gly | Val | Asp | Asn | Ala | Gly | Ala | Lys | Ala | Gly | | |
| | | | | 180 | | | | | 185 | | | | | 190 | | | |
| Leu | Thr | Phe | Leu | Val | Asp | Leu | Ile | Lys | Asn | Lys | His | Met | Asn | Ala | Asp | | |
| | | | | 195 | | | | | 200 | | | | | 205 | | | |
| Thr | Asp | Tyr | Ser | Ile | Ala | Glu | Ala | Ala | Phe | Asn | Lys | Gly | Glu | Thr | Ala | | |
| | | | | 210 | | | | | 215 | | | | | 220 | | | |
| Met | Thr | Ile | Asn | Gly | Pro | Trp | Ala | Trp | Ser | Asn | Ile | Asp | Thr | Ser | Lys | | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | | |
| Val | Asn | Tyr | Gly | Val | Thr | Val | Leu | Pro | Thr | Phe | Lys | Gly | Gln | Pro | Ser | | |
| | | | | 245 | | | | | 250 | | | | | 255 | | | |
| Lys | Pro | Phe | Val | Gly | Val | Leu | Ser | Ala | Gly | Ile | Asn | Ala | Ala | Ser | Pro | | |
| | | | | 260 | | | | | 265 | | | | | 270 | | | |
| Asn | Lys | Glu | Leu | Ala | Lys | Glu | Phe | Leu | Glu | Asn | Tyr | Leu | Leu | Thr | Asp | | |
| | | | | 275 | | | | | 280 | | | | | 285 | | | |
| Glu | Gly | Leu | Glu | Ala | Val | Asn | Lys | Asp | Lys | Pro | Leu | Gly | Ala | Val | Ala | | |
| | | | | 290 | | | | | 295 | | | | | 300 | | | |
| Leu | Lys | Ser | Tyr | Glu | Glu | Glu | Leu | Ala | Lys | Asp | Pro | Arg | Ile | Ala | Ala | | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | | |
| Thr | Met | Glu | Asn | Ala | Gln | Lys | Gly | Glu | Ile | Met | Pro | Asn | Ile | Pro | Gln | | |
| | | | | 325 | | | | | 330 | | | | | 335 | | | |
| Met | Ser | Ala | Phe | Trp | Tyr | Ala | Val | Arg | Thr | Ala | Val | Ile | Asn | Ala | Ala | | |
| | | | | 340 | | | | | 345 | | | | | 350 | | | |
| Ser | Gly | Arg | Gln | Thr | Val | Asp | Glu | Ala | Leu | Lys | Asp | Ala | Gln | Thr | Asn | | |
| | | | | 355 | | | | | 360 | | | | | 365 | | | |
| Ser | Ser | Ser | His | His | His | His | His | His | Ala | Asn | Ser | Val | Pro | Leu | Val | | |
| | | | | 370 | | | | | 375 | | | | | 380 | | | |
| Pro | Arg | Gly | Ser | Cys | Pro | Asp | Leu | Val | Cys | Tyr | Thr | Asp | Tyr | Leu | Gln | | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | | |
| Thr | Val | Ile | Cys | Ile | Leu | Glu | Met | Trp | Asn | Leu | His | Pro | Ser | Thr | Leu | | |
| | | | | 405 | | | | | 410 | | | | | 415 | | | |

Thr Leu Thr Trp Gln Asp Gln Tyr Glu Glu Leu Lys Asp Glu Ala Thr
 420 425 430
 Ser Cys Ser Leu His Arg Ser Ala His Asn Ala Thr His Ala Thr Tyr
 435 440 445

Thr Cys His Met Asp Val Phe His Phe Met Ala Asp Asp Ile Phe Ser
 450 455 460
 Val Asn Ile Thr Asp Gln Ser Gly Asn Tyr Ser Gln Glu Cys Gly Ser
 465 470 475 480
 Phe Leu Leu Ala Glu Ser Ile Lys Pro Ala Pro Pro Phe Asn Val Thr
 485 490 495
 Val Thr Phe Ser Gly Gln Tyr Asn Ile Ser Trp Arg Ser Asp Tyr Glu
 500 505 510
 Asp Pro Ala Phe Tyr Met Leu Lys Gly Lys Leu Gln Tyr Glu Leu Gln
 515 520 525
 Tyr Arg Asn Arg Gly Asp Pro Trp Ala Val Ser Pro Arg Arg Lys Leu
 530 535 540
 Ile Ser Val Asp Ser Arg Ser Val Ser Leu Leu Pro Leu Glu Phe Arg
 545 550 555 560
 Lys Asp Ser Ser Tyr Glu Leu Gln Val Arg Ala Gly Pro Met Pro Gly
 565 570 575
 Ser Ser Tyr Gln Gly Thr Trp Ser Glu Trp Ser Asp Pro Val Ile Phe
 580 585 590
 Gln Thr Gln Ser Glu Glu Leu Lys Glu Gly Trp Asn Pro His
 595 600 605

<210> 52

<211> 657

<212> DNA

<213> Homo sapiens

<400> 52

| | | | | | | |
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| tggaacctcc | accccagcac | gctcaccctt | acctggcaag | accagtatga | agagctgaag | 120 |
| gacgaggcca | cctcctgcag | cctccacagg | tcggcccaca | atgccacgca | tgccacctac | 180 |
| acctgccaca | tggtatgtatt | ccacttcatg | gccgacgaca | ttttcagtgt | caacatcaca | 240 |
| gaccagtctg | gcaactactc | ccaggagtgt | ggcagctttc | tcctggctga | gagcatcaag | 300 |
| ccggctcccc | ctttcaacgt | gactgtgacc | ttctcaggac | agtataatat | ctcctggcgc | 360 |
| tcagattacg | aagaccctgc | cttctacatg | ctgaagggca | agcttcagta | tgagctgcag | 420 |
| tacaggaacc | ggggagaccc | ctgggctgtg | agtccgagga | gaaagctgat | ctcagtggac | 480 |
| tcaagaagtg | tctccctcct | ccccctggag | ttccgcaaag | actcgagcta | tgagctgcag | 540 |
| gtgcgggcag | ggcccatgcc | tggtcctcct | taccagggga | cctggagtga | atggagtgcg | 600 |
| ccggtcatct | ttcagaccca | gtcagaggag | ttaaaggaag | gctggaaccc | tcactag | 657 |

<210> 53
 <211> 65
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<220>
 <223> Oligonucleotide primer ZC20187

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 caccg 65

<210> 54
 <211> 68
 <212> DNA
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<400> 54
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 cctttaac 68

<210> 55
 <211> 40
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<400> 55
 tgtcgatgaa gccctgaaag acgcgagac taattcgagc 40

<210> 56
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<400> 56
 acgcgcagac taattcgagc tcccaccatc accatcacca cgcgaattcg gtaccgctgg 60

<210> 57
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 <212> DNA
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<400> 57
 actcactata gggcgaattg cccgggggat ccacgcggaa ccagcggtag cgaattcgcg 60

<210> 58
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<400> 58
 acggccagtg aattgtaata cgactcacta tagggcgaat tg 42

<210> 59
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 <212> DNA
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<400> 59
 ccaggagtgt ggcagctttc 20

<210> 60
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 <212> DNA
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<220>

<223> Oligonucleotide primer ZC22276

<400> 60

gcttgccctt cagcatgtag a

21

<210> 61

<211> 23

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<223> zalpha11 TaqMan probe, ZG31

<400> 61

cggctcccc tttcaacgtg act

23

<210> 62

<211> 20

<212> DNA

<213> Artificial Sequence

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<223> Oligonucleotide primer ZC23684

<400> 62

tcacccttac ctggcaagac

20

<210> 63

<211> 41

<212> DNA

<213> Artificial Sequence

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<223> Oligonucleotide primer ZC23656

<400> 63

taatacgact cactataggg agggggagac acttcttgag t

41

<210> 64

<211> 20

<212> DNA

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<223> Oligonucleotide primer ZC23685

<400> 64

aggtctgaat cccgactctg

20

<210> 65

<211> 41

<212> DNA

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<223> Oligonucleotide primer ZC23657

<400> 65

taatacgact cactataggg aggacgtaat tgggtgtttaa t

41

<210> 66

<211> 20

<212> DNA

<213> Artificial Sequence

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<223> Oligonucleotide primer, rRNA forward primer

<400> 66

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<210> 67

<211> 18

<212> DNA

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<223> Oligonucleotide primer, rRNA reverse primer

<400> 67

gctggaatta _ccgcggct

18

<210> 68

<211> 22

<212> DNA

<213> Artificial Sequence

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<223> rRNA TaqMan probe

<400> 68

tgctggcacc agacttgccc tc

22

<210> 69

<211> 1298

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (543)...(1262)

<400> 69

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| aggcctttca acacggcttt ttagtaattc attccatcta taaacattta tggtacacct | 60 |
| actgtgtgcc aggtactgag gacacagttg tgatcagggc tagtgtagac acacaagcaa | 120 |
| aactagagac atccggaagt gtcaggagac ggagtagagg ctgggccact tagacctcag | 180 |
| gctctccctg cacacgtcct caagacctta ggacttagga acctggtccc agcaccagc | 240 |
| tgttccttgg ctggggcact ggtaactagc gtggatatga gacagaggac agtcagtcct | 300 |
| tactaaagggt gggaacacgg gctctgagaa cggacagtat tgggaacca ctgggcaggg | 360 |
| ggttcacaga cagacatcat ggcgcgtct ctctctctct ctctctcctg tttcttggt | 420 |
| cttctgcitt ccccgctctt ggcttgtccc tgtactcccc cccccacccc catctttggc | 480 |
| tctctctggt cacacccgac cttgttgtcc ccagctcatg actgtgtggt tctttctcat | 540 |
| ag aaa tgg gtt aat acc cct ttc acg gcc tcc agc ata gag ttg gtg | 587 |
| Lys Trp Val Asn Thr Pro Phe Thr Ala Ser Ser Ile Glu Leu Val | |
| 1 5 10 15 | |

| | |
|---|-----|
| cca cag agt tcc aca aca aca tca gcc tta cat ctg tca ttg tat cca | 635 |
| Pro Gln Ser Ser Thr Thr Thr Ser Ala Leu His Leu Ser Leu Tyr Pro | |
| 20 25 30 | |

| | |
|---|-----|
| gcc aag gag aag aag ttc ccg ggg ctg ccg ggt ctg gaa gag caa ctg | 683 |
| Ala Lys Glu Lys Lys Phe Pro Gly Leu Pro Gly Leu Glu Glu Gln Leu | |
| 35 40 45 | |

| | |
|---|-----|
| gag tgt gat gga atg tct gag cct ggt cac tgg tgc ata atc ccc ttg | 731 |
| Glu Cys Asp Gly Met Ser Glu Pro Gly His Trp Cys Ile Ile Pro Leu | |
| 50 55 60 | |

| | |
|---|-----|
| gca gct ggc caa gcg gtc tca gcc tac agt gag gag aga gac cgg cca | 779 |
|---|-----|

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Ala | Ala | Gly | Gln | Ala | Val | Ser | Ala | Tyr | Ser | Glu | Glu | Arg | Asp | Arg | Pro | |
| 65 | | | | | | 70 | | | | | 75 | | | | | |
| tat | ggg | ctg | gtg | tcc | att | gac | aca | gtg | act | gtg | gga | gat | gca | gag | ggc | 827 |
| Tyr | Gly | Leu | Val | Ser | Ile | Asp | Thr | Val | Thr | Val | Gly | Asp | Ala | Glu | Gly | |
| 80 | | | | | 85 | | | | | 90 | | | | | 95 | |
| ctg | tgt | gtc | tgg | ccc | tgt | agc | tgt | gag | gat | gat | ggc | tat | cca | gcc | atg | 875 |
| Leu | Cys | Val | Trp | Pro | Cys | Ser | Cys | Glu | Asp | Asp | Gly | Tyr | Pro | Ala | Met | |
| | | | | 100 | | | | | 105 | | | | | 110 | | |
| aac | ctg | gat | gct | ggc | cga | gag | tct | ggc | cct | aat | tca | gag | gat | ctg | ctc | 923 |
| Asn | Leu | Asp | Ala | Gly | Arg | Glu | Ser | Gly | Pro | Asn | Ser | Glu | Asp | Leu | Leu | |
| | | | 115 | | | | | 120 | | | | | 125 | | | |
| ttg | gtc | aca | gac | cct | gct | ttt | ctg | tct | tgc | ggc | tgt | gtc | tca | ggg | agt | 971 |
| Leu | Val | Thr | Asp | Pro | Ala | Phe | Leu | Ser | Cys | Gly | Cys | Val | Ser | Gly | Ser | |
| | | 130 | | | | | 135 | | | | | 140 | | | | |
| ggg | ctc | agg | ctt | gga | ggc | tcc | cca | ggc | agc | cta | ctg | gac | agg | ttg | agg | 1019 |
| Gly | Leu | Arg | Leu | Gly | Gly | Ser | Pro | Gly | Ser | Leu | Leu | Asp | Arg | Leu | Arg | |
| 145 | | | | | | 150 | | | | | 155 | | | | | |
| ctg | tca | ttt | gca | aag | gaa | ggg | gac | tgg | aca | gca | gac | cca | acc | tgg | aga | 1067 |
| Leu | Ser | Phe | Ala | Lys | Glu | Gly | Asp | Trp | Thr | Ala | Asp | Pro | Thr | Trp | Arg | |
| 160 | | | | | 165 | | | | | 170 | | | | | 175 | |
| act | ggg | tcc | cca | gga | ggg | ggc | tct | gag | agt | gaa | gca | ggg | tcc | ccc | cct | 1115 |
| Thr | Gly | Ser | Pro | Gly | Gly | Gly | Ser | Glu | Ser | Glu | Ala | Gly | Ser | Pro | Pro | |
| | | | | 180 | | | | | 185 | | | | | 190 | | |
| ggg | ctg | gac | atg | gac | aca | ttt | gac | agt | ggc | ttt | gca | ggg | tca | gac | tgt | 1163 |
| Gly | Leu | Asp | Met | Asp | Thr | Phe | Asp | Ser | Gly | Phe | Ala | Gly | Ser | Asp | Cys | |
| | | | 195 | | | | | 200 | | | | | 205 | | | |
| ggc | agc | ccc | gtg | gag | act | gat | gaa | gga | ccc | cct | cga | agc | tat | ctc | cgc | 1211 |
| Gly | Ser | Pro | Val | Glu | Thr | Asp | Glu | Gly | Pro | Pro | Arg | Ser | Tyr | Leu | Arg | |
| | | 210 | | | | | 215 | | | | | 220 | | | | |
| cag | tgg | gtg | gtc | agg | acc | cct | cca | cct | gtg | gac | agt | gga | gcc | cag | agc | 1259 |
| Gln | Trp | Val | Val | Arg | Thr | Pro | Pro | Pro | Val | Asp | Ser | Gly | Ala | Gln | Ser | |
| 225 | | | | | | 230 | | | | | 235 | | | | | |

agc tagcatataa taaccagcta tagtgagaag aggcct

1298

Ser

240

<210> 70

<211> 240

<212> PRT

<213> Mus musculus

<400> 70

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| Lys | Trp | Val | Asn | Thr | Pro | Phe | Thr | Ala | Ser | Ser | Ile | Glu | Leu | Val | Pro |
| 1 | | | | 5 | | | | 10 | | | | | | 15 | |
| Gln | Ser | Ser | Thr | Thr | Thr | Ser | Ala | Leu | His | Leu | Ser | Leu | Tyr | Pro | Ala |
| | | | 20 | | | | 25 | | | | | | 30 | | |
| Lys | Glu | Lys | Lys | Phe | Pro | Gly | Leu | Pro | Gly | Leu | Glu | Glu | Gln | Leu | Glu |
| | 35 | | | | | 40 | | | | | 45 | | | | |
| Cys | Asp | Gly | Met | Ser | Glu | Pro | Gly | His | Trp | Cys | Ile | Ile | Pro | Leu | Ala |
| 50 | | | | | 55 | | | 60 | | | | | | | |
| Ala | Gly | Gln | Ala | Val | Ser | Ala | Tyr | Ser | Glu | Glu | Arg | Asp | Arg | Pro | Tyr |
| 65 | | | | 70 | | | | 75 | | | | | | 80 | |
| Gly | Leu | Val | Ser | Ile | Asp | Thr | Val | Thr | Val | Gly | Asp | Ala | Glu | Gly | Leu |
| | | | 85 | | | 90 | | | | | | | 95 | | |
| Cys | Val | Trp | Pro | Cys | Ser | Cys | Glu | Asp | Asp | Gly | Tyr | Pro | Ala | Met | Asn |
| | 100 | | | | | 105 | | | | | | 110 | | | |
| Leu | Asp | Ala | Gly | Arg | Glu | Ser | Gly | Pro | Asn | Ser | Glu | Asp | Leu | Leu | Leu |
| | 115 | | | | 120 | | | | | | 125 | | | | |
| Val | Thr | Asp | Pro | Ala | Phe | Leu | Ser | Cys | Gly | Cys | Val | Ser | Gly | Ser | Gly |
| | 130 | | | | 135 | | | | | | 140 | | | | |
| Leu | Arg | Leu | Gly | Gly | Ser | Pro | Gly | Ser | Leu | Leu | Asp | Arg | Leu | Arg | Leu |
| 145 | | | | 150 | | | | 155 | | | | | | 160 | |
| Ser | Phe | Ala | Lys | Glu | Gly | Asp | Trp | Thr | Ala | Asp | Pro | Thr | Trp | Arg | Thr |
| | 165 | | | | 170 | | | | | | | | 175 | | |
| Gly | Ser | Pro | Gly | Gly | Gly | Ser | Glu | Ser | Glu | Ala | Gly | Ser | Pro | Pro | Gly |
| | 180 | | | | 185 | | | | | | | 190 | | | |
| Leu | Asp | Met | Asp | Thr | Phe | Asp | Ser | Gly | Phe | Ala | Gly | Ser | Asp | Cys | Gly |
| | 195 | | | | 200 | | | | | | 205 | | | | |
| Ser | Pro | Val | Glu | Thr | Asp | Glu | Gly | Pro | Pro | Arg | Ser | Tyr | Leu | Arg | Gln |
| | 210 | | | | 215 | | | | | | 220 | | | | |
| Trp | Val | Val | Arg | Thr | Pro | Pro | Pro | Val | Asp | Ser | Gly | Ala | Gln | Ser | Ser |
| 225 | | | | 230 | | | | | 235 | | | | | 240 | |

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<220>
 <223> Oligonucleotide primer ZC24432

<400> 71
 atgtctgagc ctggtcactg gtg 23

<210> 72
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 <212> DNA
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<220>
 <223> Oligonucleotide primer ZC24433

<400> 72
 tctgaacctg caaagccact gtc 23

<210> 73
 <211> 27
 <212> DNA
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<400> 73
 ccatcctaatac gactcact atagggc 27

<210> 74
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<400> 74
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<210> 75
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<400> 75
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<210> 76
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<400> 76
 actcactata gggctcgagc ggc 23

<210> 77
 <211> 23
 <212> DNA
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<220>
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<400> 77
 tccagcatag agttggtgcc aca 23

<210> 78
 <211> 592
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<220>
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 <222> (436)...(592)

<400> 78

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cgcccgggca ggtctccgct ggtggccctg tgtttcagtc gcgcacagct gtctgcccac    60
ttctcctgtg gtgtgcctca cggtcacttg cttgtctgac cgcaagtctg cccatccctg    120
gggcagccaa ctggcctcag cccgtgcccc aggcgtgccc tgtctctgtc tggtgcccc    180
agccctactg tcttcctctg tgtaggctct gccagatgc ccggctggtc ctcagcctca    240
ggactatctc agcagtgact cccctgattc tggacttgca cctgactgaa ctcctgcccc    300
cctcaaacct tcacctcca ccaccaccac tccgagtccc gctgtgactc ccacgcccag    360
gagaccaccc aagtgcccc gctaaagaa tggctttctg aggaagatcc tgaaggagta    420
ggtctgggac acagc atg ccc cgg ggc cca gtg gct gcc tta ctc ctg ctg    471

```

```

Met Pro Arg Gly Pro Val Ala Ala Leu Leu Leu Leu
      1           5           10

```

```

att ctc cat gga gct tgg agc tgc ctg grc ctc act tgc tac act gac    519
Ile Leu His Gly Ala Trp Ser Cys Leu Xaa Leu Thr Cys Tyr Thr Asp
      15           20           25

```

```

tac ctc tgg acc atc acc tgt gtc ctg gag aca cgg agc ccc aac ccc    567
Tyr Leu Trp Thr Ile Thr Cys Val Leu Glu Thr Arg Ser Pro Asn Pro
      30           35           40

```

```

agc ata ctc agt ctc acc tgg caa g    592
Ser Ile Leu Ser Leu Thr Trp Gln
      45           50

```

<210> 79

<211> 52

<212> PRT

<213> Mus musculus

<220>

<221> VARIANT

<222> (1)...(51)

<223> Xaa = Any Amino Acid

<400> 79

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Met Pro Arg Gly Pro Val Ala Ala Leu Leu Leu Leu Ile Leu His Gly
  1           5           10           15
Ala Trp Ser Cys Leu Xaa Leu Thr Cys Tyr Thr Asp Tyr Leu Trp Thr
      20           25           30
Ile Thr Cys Val Leu Glu Thr Arg Ser Pro Asn Pro Ser Ile Leu Ser
      35           40           45
Leu Thr Trp Gln
      50

```

<210> 80
 <211> 1229
 <212> DNA
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 <222> (3)...(1196)

<400> 80

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|--|----|
| ga cgc tat gat atc tcc tgg gac tca gct tat gac gaa ccc tcc aac | 47 |
| Arg Tyr Asp Ile Ser Trp Asp Ser Ala Tyr Asp Glu Pro Ser Asn | |
| 1 5 10 15 | |

| | |
|---|----|
| tac gtg ctg aga ggc aag cta caa tat gag ctg cag tat cgg aac ctc | 95 |
| Tyr Val Leu Arg Gly Lys Leu Gln Tyr Glu Leu Gln Tyr Arg Asn Leu | |
| 20 25 30 | |

| | |
|---|-----|
| aga gac ccc tat gct gtg agg ccg gtg acc aag ctg atc tca gtg gac | 143 |
| Arg Asp Pro Tyr Ala Val Arg Pro Val Thr Lys Leu Ile Ser Val Asp | |
| 35 40 45 | |

| | |
|---|-----|
| tca aga aac gtc tct ctt ctc cct gaa gag ttc cac aaa gat tct agc | 191 |
| Ser Arg Asn Val Ser Leu Leu Pro Glu Glu Phe His Lys Asp Ser Ser | |
| 50 55 60 | |

| | |
|---|-----|
| tac cag ctg cag atg cgg gca gcg cct cag cca ggc act tca ttc agg | 239 |
| Tyr Gln Leu Gln Met Arg Ala Ala Pro Gln Pro Gly Thr Ser Phe Arg | |
| 65 70 75 | |

| | |
|---|-----|
| ggg acc tgg agt gag tgg agt gac ccc gtc atc ttt cgg acc cag gct | 287 |
| Gly Thr Trp Ser Glu Trp Ser Asp Pro Val Ile Phe Arg Thr Gln Ala | |
| 80 85 90 95 | |

| | |
|---|-----|
| ggg gag ccc gag gca ggc tgg gac cct cac atg ctg ctg ctc ctg gct | 335 |
| Gly Glu Pro Glu Ala Gly Trp Asp Pro His Met Leu Leu Leu Leu Ala | |
| 100 105 110 | |

| | |
|---|-----|
| gtc ttg atc att gtc ctg gtt ttc atg ggt ctg aag atc cac ctg cct | 383 |
| Val Leu Ile Ile Val Leu Val Phe Met Gly Leu Lys Ile His Leu Pro | |
| 115 120 125 | |

| | |
|---|-----|
| tgg agg cta tgg aaa aag ata tgg gca cca gtg ccc acc cct gag agt | 431 |
|---|-----|

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Trp | Arg | Leu | Trp | Lys | Lys | Ile | Trp | Ala | Pro | Val | Pro | Thr | Pro | Glu | Ser | |
| | | 130 | | | | | 135 | | | | | 140 | | | | |
| ttc | ttc | cag | ccc | ctg | tgc | agg | gag | cac | agc | ggg | aac | ttc | aag | aaa | tgg | 479 |
| Phe | Phe | Gln | Pro | Leu | Cys | Arg | Glu | His | Ser | Gly | Asn | Phe | Lys | Lys | Trp | |
| | | 145 | | | | 150 | | | | | 155 | | | | | |
| gtt | aat | acc | cct | ttc | acg | gcc | tcc | agc | ata | gag | ttg | gtg | cca | cag | agt | 527 |
| Val | Asn | Thr | Pro | Phe | Thr | Ala | Ser | Ser | Ile | Glu | Leu | Val | Pro | Gln | Ser | |
| 160 | | | | | 165 | | | | | 170 | | | | | 175 | |
| tcc | aca | aca | aca | tca | gcc | tta | cat | ctg | tca | ttg | tat | cca | gcc | aag | gag | 575 |
| Ser | Thr | Thr | Thr | Ser | Ala | Leu | His | Leu | Ser | Leu | Tyr | Pro | Ala | Lys | Glu | |
| | | | | 180 | | | | | 185 | | | | | 190 | | |
| aag | aag | ttc | ccg | ggg | ctg | ccg | ggt | ctg | gaa | gag | caa | ctg | gag | tgt | gat | 623 |
| Lys | Lys | Phe | Pro | Gly | Leu | Pro | Gly | Leu | Glu | Glu | Gln | Leu | Glu | Cys | Asp | |
| | | | 195 | | | | 200 | | | | | 205 | | | | |
| gga | atg | tct | gag | cct | ggt | cac | tgg | tgc | ata | atc | ccc | ttg | gca | gct | ggc | 671 |
| Gly | Met | Ser | Glu | Pro | Gly | His | Trp | Cys | Ile | Ile | Pro | Leu | Ala | Ala | Gly | |
| | | 210 | | | | | 215 | | | | | 220 | | | | |
| caa | gcg | gtc | tca | gcc | tac | agt | gag | gag | aga | gac | cgg | cca | tat | ggt | ctg | 719 |
| Gln | Ala | Val | Ser | Ala | Tyr | Ser | Glu | Glu | Arg | Asp | Arg | Pro | Tyr | Gly | Leu | |
| | | 225 | | | | 230 | | | | | 235 | | | | | |
| gtg | tcc | att | gac | aca | gtg | act | gtg | gga | gat | gca | gag | ggc | ctg | tgt | gtc | 767 |
| Val | Ser | Ile | Asp | Thr | Val | Thr | Val | Gly | Asp | Ala | Glu | Gly | Leu | Cys | Val | |
| 240 | | | | | 245 | | | | | 250 | | | | | 255 | |
| tgg | ccc | tgt | agc | tgt | gag | gat | gat | ggc | tat | cca | gcc | atg | aac | ctg | gat | 815 |
| Trp | Pro | Cys | Ser | Cys | Glu | Asp | Asp | Gly | Tyr | Pro | Ala | Met | Asn | Leu | Asp | |
| | | | | 260 | | | | | 265 | | | | | 270 | | |
| gct | ggc | cga | gag | tct | ggc | cct | aat | tca | gag | gat | ctg | ctc | ttg | gtc | aca | 863 |
| Ala | Gly | Arg | Glu | Ser | Gly | Pro | Asn | Ser | Glu | Asp | Leu | Leu | Leu | Val | Thr | |
| | | | 275 | | | | | 280 | | | | | 285 | | | |
| gac | cct | gct | ttt | ctg | tct | tgc | ggc | tgt | gtc | tca | ggt | agt | ggt | ctc | agg | 911 |
| Asp | Pro | Ala | Phe | Leu | Ser | Cys | Gly | Cys | Val | Ser | Gly | Ser | Gly | Leu | Arg | |
| | | 290 | | | | | 295 | | | | | 300 | | | | |

ctt gga ggc tcc cca ggc agc cta ctg gac agg ttg agg ctg tca ttt 959
 Leu Gly Gly Ser Pro Gly Ser Leu Leu Asp Arg Leu Arg Leu Ser Phe
 305 310 315

gca aag gaa ggg gac tgg aca gca gac cca acc tgg aga act ggg tcc 1007
 Ala Lys Glu Gly Asp Trp Thr Ala Asp Pro Thr Trp Arg Thr Gly Ser
 320 325 330 335

cca gga ggg ggc tct gag agt gaa gca ggt tcc ccc cct ggt ctg gac 1055
 Pro Gly Gly Gly Ser Glu Ser Glu Ala Gly Ser Pro Pro Gly Leu Asp
 340 345 350

atg gac aca ttt gac agt ggc ttt gca ggt tca gac tgt ggc agc ccc 1103
 Met Asp Thr Phe Asp Ser Gly Phe Ala Gly Ser Asp Cys Gly Ser Pro
 355 360 365

gtg gag act gat gaa gga ccc cct cga agc tat ctc cgc cag tgg gtg 1151
 Val Glu Thr Asp Glu Gly Pro Pro Arg Ser Tyr Leu Arg Gln Trp Val
 370 375 380

gtc agg acc cct cca cct gtg gac agt gga gcc cag agc agc tag 1196
 Val Arg Thr Pro Pro Pro Val Asp Ser Gly Ala Gln Ser Ser *
 385 390 395

catataataa ccagctatag tgagaagagg cct 1229

<210> 81

<211> 397

<212> PRT

<213> Mus musculus

<400> 81

Arg Tyr Asp Ile Ser Trp Asp Ser Ala Tyr Asp Glu Pro Ser Asn Tyr
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 20 25 30
 Asp Pro Tyr Ala Val Arg Pro Val Thr Lys Leu Ile Ser Val Asp Ser
 35 40 45
 Arg Asn Val Ser Leu Leu Pro Glu Glu Phe His Lys Asp Ser Ser Tyr
 50 55 60
 Gln Leu Gln Met Arg Ala Ala Pro Gln Pro Gly Thr Ser Phe Arg Gly
 65 70 75 80

Thr Trp Ser Glu Trp Ser Asp Pro Val Ile Phe Arg Thr Gln Ala Gly
 85 90 95
 Glu Pro Glu Ala Gly Trp Asp Pro His Met Leu Leu Leu Leu Ala Val
 100 105 110
 Leu Ile Ile Val Leu Val Phe Met Gly Leu Lys Ile His Leu Pro Trp
 115 120 125
 Arg Leu Trp Lys Lys Ile Trp Ala Pro Val Pro Thr Pro Glu Ser Phe
 130 135 140
 Phe Gln Pro Leu Cys Arg Glu His Ser Gly Asn Phe Lys Lys Trp Val
 145 150 155 160
 Asn Thr Pro Phe Thr Ala Ser Ser Ile Glu Leu Val Pro Gln Ser Ser
 165 170 175
 Thr Thr Thr Ser Ala Leu His Leu Ser Leu Tyr Pro Ala Lys Glu Lys
 180 185 190
 Lys Phe Pro Gly Leu Pro Gly Leu Glu Glu Gln Leu Glu Cys Asp Gly
 195 200 205
 Met Ser Glu Pro Gly His Trp Cys Ile Ile Pro Leu Ala Ala Gly Gln
 210 215 220
 Ala Val Ser Ala Tyr Ser Glu Glu Arg Asp Arg Pro Tyr Gly Leu Val
 225 230 235 240
 Ser Ile Asp Thr Val Thr Val Gly Asp Ala Glu Gly Leu Cys Val Trp
 245 250 255
 Pro Cys Ser Cys Glu Asp Asp Gly Tyr Pro Ala Met Asn Leu Asp Ala
 260 265 270
 Gly Arg Glu Ser Gly Pro Asn Ser Glu Asp Leu Leu Leu Val Thr Asp
 275 280 285
 Pro Ala Phe Leu Ser Cys Gly Cys Val Ser Gly Ser Gly Leu Arg Leu
 290 295 300
 Gly Gly Ser Pro Gly Ser Leu Leu Asp Arg Leu Arg Leu Ser Phe Ala
 305 310 315 320
 Lys Glu Gly Asp Trp Thr Ala Asp Pro Thr Trp Arg Thr Gly Ser Pro
 325 330 335

 Gly Gly Gly Ser Glu Ser Glu Ala Gly Ser Pro Pro Gly Leu Asp Met
 340 345 350
 Asp Thr Phe Asp Ser Gly Phe Ala Gly Ser Asp Cys Gly Ser Pro Val
 355 360 365
 Glu Thr Asp Glu Gly Pro Pro Arg Ser Tyr Leu Arg Gln Trp Val Val
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 aggagtaggt ctgggacaca gc atg ccc cgg ggc cca gtg gct gcc tta ctc 172

Met Pro Arg Gly Pro Val Ala Ala Leu Leu
 1 5 10

ctg ctg att ctc cat gga gct tgg agc tgc ctg gac ctc act tgc tac 220
 Leu Leu Ile Leu His Gly Ala Trp Ser Cys Leu Asp Leu Thr Cys Tyr
 15 20 25

act gac tac ctc tgg acc atc acc tgt gtc ctg gag aca cgg agc ccc 268

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Asp | Tyr | Leu | Trp | Thr | Ile | Thr | Cys | Val | Leu | Glu | Thr | Arg | Ser | Pro | |
| | | | 30 | | | | | 35 | | | | | 40 | | | |
| aac | ccc | agc | ata | ctc | agt | ctc | acc | tgg | caa | gat | gaa | tat | gag | gaa | ctt | 316 |
| Asn | Pro | Ser | Ile | Leu | Ser | Leu | Thr | Trp | Gln | Asp | Glu | Tyr | Glu | Glu | Leu | |
| | | 45 | | | | | 50 | | | | 55 | | | | | |
| cag | gac | caa | gag | acc | ttc | tgc | agc | cta | cac | agg | tct | ggc | cac | aac | acc | 364 |
| Gln | Asp | Gln | Glu | Thr | Phe | Cys | Ser | Leu | His | Arg | Ser | Gly | His | Asn | Thr | |
| | 60 | | | | | 65 | | | | | 70 | | | | | |
| aca | cat | ata | tgg | tac | acg | tgc | cat | atg | cgc | ttg | tct | caa | ttc | ctg | tcc | 412 |
| Thr | His | Ile | Trp | Tyr | Thr | Cys | His | Met | Arg | Leu | Ser | Gln | Phe | Leu | Ser | |
| 75 | | | | | 80 | | | | | 85 | | | | | 90 | |
| gat | gaa | gtt | ttc | att | gtc | aat | gtg | acg | gac | cag | tct | ggc | aac | aac | tcc | 460 |
| Asp | Glu | Val | Phe | Ile | Val | Asn | Val | Thr | Asp | Gln | Ser | Gly | Asn | Asn | Ser | |
| | | | | 95 | | | | 100 | | | | | | 105 | | |
| caa | gag | tgt | ggc | agc | ttt | gtc | ctg | gct | gag | agc | atc | aaa | cca | gct | ccc | 508 |
| Gln | Glu | Cys | Gly | Ser | Phe | Val | Leu | Ala | Glu | Ser | Ile | Lys | Pro | Ala | Pro | |
| | | | 110 | | | | | 115 | | | | | 120 | | | |
| ccc | ttg | aac | gtg | act | gtg | gcc | ttc | tca | gga | cgc | tat | gat | atc | tcc | tgg | 556 |
| Pro | Leu | Asn | Val | Thr | Val | Ala | Phe | Ser | Gly | Arg | Tyr | Asp | Ile | Ser | Trp | |
| | | 125 | | | | | 130 | | | | | 135 | | | | |
| gac | tca | gct | tat | gac | gaa | ccc | tcc | aac | tac | gtg | ctg | agg | ggc | aag | cta | 604 |
| Asp | Ser | Ala | Tyr | Asp | Glu | Pro | Ser | Asn | Tyr | Val | Leu | Arg | Gly | Lys | Leu | |
| | 140 | | | | | 145 | | | | | 150 | | | | | |
| caa | tat | gag | ctg | cag | tat | cgg | aac | ctc | aga | gac | ccc | tat | gct | gtg | agg | 652 |
| Gln | Tyr | Glu | Leu | Gln | Tyr | Arg | Asn | Leu | Arg | Asp | Pro | Tyr | Ala | Val | Arg | |
| 155 | | | | | 160 | | | | | 165 | | | | | 170 | |
| ccg | gtg | acc | aag | ctg | atc | tca | gtg | gac | tca | aga | aac | gtc | tct | ctt | ctc | 700 |
| Pro | Val | Thr | Lys | Leu | Ile | Ser | Val | Asp | Ser | Arg | Asn | Val | Ser | Leu | Leu | |
| | | | | 175 | | | | 180 | | | | | | 185 | | |
| cct | gaa | gag | ttc | cac | aaa | gat | tct | agc | tac | cag | ctg | cag | gtg | cgg | gca | 748 |
| Pro | Glu | Glu | Phe | His | Lys | Asp | Ser | Ser | Tyr | Gln | Leu | Gln | Val | Arg | Ala | |
| | | | 190 | | | | | 195 | | | | | 200 | | | |

| | |
|---|------|
| gcg cct cag cca ggc act tca ttc agg ggg acc tgg agt gag tgg agt | 796 |
| Ala Pro Gln Pro Gly Thr Ser Phe Arg Gly Thr Trp Ser Glu Trp Ser | |
| 205 210 215 | |
| gac ccc gtc atc ttt cag acc cag gct ggg gag ccc gag gca ggc tgg | 844 |
| Asp Pro Val Ile Phe Gln Thr Gln Ala Gly Glu Pro Glu Ala Gly Trp | |
| 220 225 230 | |
| gac cct cac atg ctg ctg ctc ctg gct gtc ttg atc att gtc ctg gtt | 892 |
| Asp Pro His Met Leu Leu Leu Leu Ala Val Leu Ile Ile Val Leu Val | |
| 235 240 245 250 | |
| ttc atg ggt ctg aag atc cac ctg cct tgg agg cta tgg aaa aag ata | 940 |
| Phe Met Gly Leu Lys Ile His Leu Pro Trp Arg Leu Trp Lys Lys Ile | |
| 255 260 265 | |
| tgg gca cca gtg ccc acc cct gag agt ttc ttc cag ccc ctg tac agg | 988 |
| Trp Ala Pro Val Pro Thr Pro Glu Ser Phe Phe Gln Pro Leu Tyr Arg | |
| 270 275 280 | |
| gag cac agc ggg aac ttc aag aaa tgg gtt aat acc cct ttc acg gcc | 1036 |
| Glu His Ser Gly Asn Phe Lys Lys Trp Val Asn Thr Pro Phe Thr Ala | |
| 285 290 295 | |
| tcc agc ata gag ttg gtg cca cag agt tcc aca aca aca tca gcc tta | 1084 |
| Ser Ser Ile Glu Leu Val Pro Gln Ser Ser Thr Thr Thr Ser Ala Leu | |
| 300 305 310 | |
| cat ctg tca ttg tat cca gcc aag gag aag aag ttc ccg ggg ctg ccg | 1132 |
| His Leu Ser Leu Tyr Pro Ala Lys Glu Lys Lys Phe Pro Gly Leu Pro | |
| 315 320 325 330 | |
| ggt ctg gaa gag caa ctg gag tgt gat gga atg tct gag cct ggt cac | 1180 |
| Gly Leu Glu Glu Gln Leu Glu Cys Asp Gly Met Ser Glu Pro Gly His | |
| 335 340 345 | |
| tgg tgc ata atc ccc ttg gca gct ggc caa gcg gtc tca gcc tac agt | 1228 |
| Trp Cys Ile Ile Pro Leu Ala Ala Gly Gln Ala Val Ser Ala Tyr Ser | |
| 350 355 360 | |
| gag gag aga gac cgg cca tat ggt ctg gtg tcc att gac aca gtg act | 1276 |

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 Ile Thr Cys Val Leu Glu Thr Arg Ser Pro Asn Pro Ser Ile Leu Ser
 35 40 45
 Leu Thr Trp Gln Asp Glu Tyr Glu Glu Leu Gln Asp Gln Glu Thr Phe
 50 55 60
 Cys Ser Leu His Arg Ser Gly His Asn Thr Thr His Ile Trp Tyr Thr
 65 70 75 80
 Cys His Met Arg Leu Ser Gln Phe Leu Ser Asp Glu Val Phe Ile Val
 85 90 95
 Asn Val Thr Asp Gln Ser Gly Asn Asn Ser Gln Glu Cys Gly Ser Phe
 100 105 110
 Val Leu Ala Glu Ser Ile Lys Pro Ala Pro Pro Leu Asn Val Thr Val
 115 120 125
 Ala Phe Ser Gly Arg Tyr Asp Ile Ser Trp Asp Ser Ala Tyr Asp Glu
 130 135 140
 Pro Ser Asn Tyr Val Leu Arg Gly Lys Leu Gln Tyr Glu Leu Gln Tyr
 145 150 155 160
 Arg Asn Leu Arg Asp Pro Tyr Ala Val Arg Pro Val Thr Lys Leu Ile
 165 170 175
 Ser Val Asp Ser Arg Asn Val Ser Leu Leu Pro Glu Glu Phe His Lys
 180 185 190
 Asp Ser Ser Tyr Gln Leu Gln Val Arg Ala Ala Pro Gln Pro Gly Thr
 195 200 205
 Ser Phe Arg Gly Thr Trp Ser Glu Trp Ser Asp Pro Val Ile Phe Gln
 210 215 220
 Thr Gln Ala Gly Glu Pro Glu Ala Gly Trp Asp Pro His Met Leu Leu
 225 230 235 240
 Leu Leu Ala Val Leu Ile Ile Val Leu Val Phe Met Gly Leu Lys Ile
 245 250 255
 His Leu Pro Trp Arg Leu Trp Lys Lys Ile Trp Ala Pro Val Pro Thr
 260 265 270
 Pro Glu Ser Phe Phe Gln Pro Leu Tyr Arg Glu His Ser Gly Asn Phe
 275 280 285

Lys Lys Trp Val Asn Thr Pro Phe Thr Ala Ser Ser Ile Glu Leu Val
 290 295 300
 Pro Gln Ser Ser`Thr Thr Thr Ser Ala Leu His Leu Ser Leu Tyr Pro
 305 310 315 320
 Ala Lys Glu Lys Lys Phe Pro Gly Leu Pro Gly Leu Glu Glu Gln Leu
 325 330 335
 Glu Cys Asp Gly Met Ser Glu Pro Gly His Trp Cys Ile Ile Pro Leu
 340 345 350
 Ala Ala Gly Gln Ala Val Ser Ala Tyr Ser Glu Glu Arg Asp Arg Pro
 355 360 365
 Tyr Gly Leu Val Ser Ile Asp Thr Val Thr Val Gly Asp Ala Glu Gly
 370 375 380
 Leu Cys Val Trp Pro Cys Ser Cys Glu Asp Asp Gly Tyr Pro Ala Met
 385 390 395 400
 Asn Leu Asp Ala Gly Arg Glu Ser Gly Pro Asn Ser Glu Asp Leu Leu
 405 410 415
 Leu Val Thr Asp Pro Ala Phe Leu Ser Cys Gly Cys Val Ser Gly Ser
 420 425 430
 Gly Leu Arg Leu Gly Gly Ser Pro Gly Ser Leu Leu Asp Arg Leu Arg
 435 440 445
 Leu Ser Phe Ala Lys Glu Gly Asp Trp Thr Ala Asp Pro Thr Trp Arg
 450 455 460
 Thr Gly Ser Pro Gly Gly Gly Ser Glu Ser Glu Ala Gly Ser Pro Pro
 465 470 475 480
 Gly Leu Asp Met Asp Thr Phe Asp Ser Gly Phe Ala Gly Ser Asp Cys
 485 490 495
 Gly Ser Pro Val Glu Thr Asp Glu Gly Pro Pro Arg Ser Tyr Leu Arg
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 Gln Trp Val Val Arg Thr Pro Pro Pro Val Asp Ser Gly Ala Gln Ser
 515 520 525
 Ser

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<223> Oligonucleotide primer ZC694

<400> 87
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<400> 91

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20